BURNER FLAME STABILIZERS

How work
How attached

turning vanes
atyip
axial + tangential velocities

Purpose:

1. Out-Of-Service Operation
   -Minimize ~~Overheating:~~ Sets swirel factor and adverse pressure gradient such that hot flue gas is not sucked back into burner and windbox.
   -Minimize Burner Line Fires: With a proper swirel number, flue gas recirculation back into the burner is eliminated. This recirculation gas causes nozzle tip pluggage which is one of the causes of out-of-service burner line fires.

sloggy + faulsy

2. In-Service Operation
   -Improve Flame Stability (thru load range):
   -Reduce Severity of Eyebrows:
   -No Adverse Effects to:
      Scanner Operation
      NOx levels
      LOI levels
      O2/CO levels

Preliminary Results

test

Reduce Backplate Temperature Requirements:
-Extend life of burner

w/o giving up Mb

Improve Boiler Performance:
-~~Reduce cooling air flow requirements~~

Based on Modeling

- Will not function w/ existing spin vanes
- flat blade
- too far back

Basis: International Flame Institute

w/o stabilizers
- We know what the ~~expect same~~ operating conditions will be
- It's documented
- ~~Why jeopardize integrity~~
- Boiler has not made any changes to the burner to change operational conditions.
  Changes made purely for 1350F operation (thermal expansion)